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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,204	02/28/2002	Takako Suzuki	Q67844	6177

7590 03/27/2003

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

CHU, JOHN S Y

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/084,204

Applicant(s)

SUZUKI ET AL

Examiner

John S. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/322,978.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3+4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

This Office action is in response to the application filed February 28, 2002.

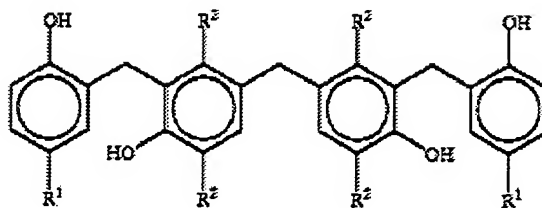
Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-4, 6-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,379,859. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims to the U.S. patent 6,379,859 are drawn to the same positive photoresist composition comprising an alkali-soluble resin, a photosensitizer of methyl gallate and a quinonediazide ester of compound of formula (I)



and at least one compound of phenol group-containing compounds selected from the group consisting of the following compounds (c-1)-(c6) and having an elution time in the range

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from 6 to 30 minutes in high performance liquid chromatography, said high performance liquid chromatography being conducted under the following conditions: eluent: a mixture solvent of water: tetrahydrofuran:methanol=40:24:36 (by weight): column 4.6mm(diameter x 150 mm (length) containing 5µm silica gel as a filler (carbon content being about 15 %); column temperature: 45.0° C; and supply rate of eluent: 0.7.00 ml/min.

The current application recites identical compounds of (c2), (c3) and (c4) in the positive photoresist composition, which are identical to (c2), (c3) and (c4) in the U.S. patent positive photoresist.

The scope of the claims recites the compounds individually as opposed to the U.S. patent, which recites them in Markush format from (c1)-(c6). Thus the claims are not identical, but do overlap in scope.

It would have been *prima facie* obvious to one of ordinary skill in the art of positive photoresist compositions to duplicate the composition of the claims of the U.S. patent with the reasonable expectation of same or similar results for having a pattern with good shape whose changes are minimized in a wide range over the surface of the substrate.

Claims 17-19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/035,137. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims to the U.S. Application 10/035,137 recite a positive photoresist composition comprising the identical alkali-soluble resin, the identical photosensitizer and a phenol compound which would meets the scope of ingredient (C) and the elution properties recited in the current application. The claims are not identical wherein U.S.

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SN 10/035,137 recites the phenol compound without the elution properties as currently claimed, however the claims do overlap and would extend any grant to the positive photoresist composition.

It would have been *prima facie* obvious to one of ordinary skill in the art of positive photoresist compositions to duplicate the positive photoresist composition as wherein a phenol compound (C) as recited in U.S. SN 10/035,137 is used and reasonably expect a photoresist composition excellent in sensitivity and less shrinkage of the pattern.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-4 and 6-20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the quinonediazide methyl gallate compound which is present in all the examples and is required to provide the improved resist pattern having a good shape.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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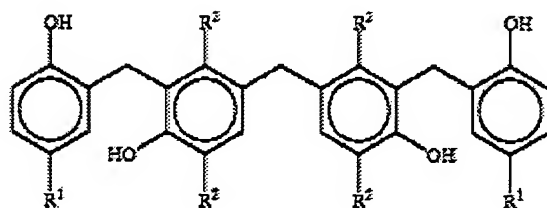
such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-4 and 6-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over KAWATA et al in view of MOMOTA et al further in view of SATO et al, ANDO et al and UETANI et al '657.

The claimed invention is drawn to a positive photoresist composition comprising

(A) an alkali-soluble resin

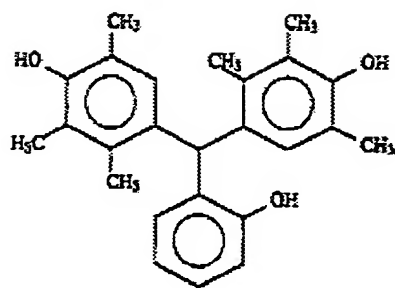
(B) a photosensitizer containing a quinonediazide ester of a compound of the following formula (I)



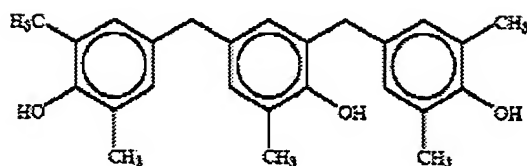
,and

(C) at least one compound of phenol group-containing compounds having structural formula (C2), (C3) or (C4) and having an elution time in the range from 6 to 30 minutes in high performance liquid chromatography, said high performance liquid chromatography being conducted under the following conditions: eluent: a mixture solvent of water: tetrahydrofuran:methanol=40:24:36 (by weight): column 4.6mm(diameter x 150 mm (length) containing 5 μ m silica gel as a filler (carbon content being about 15 %); column temperature: 45.0 $^{\circ}$ C; and supply rate of eluent: 0.7.00 ml/min.

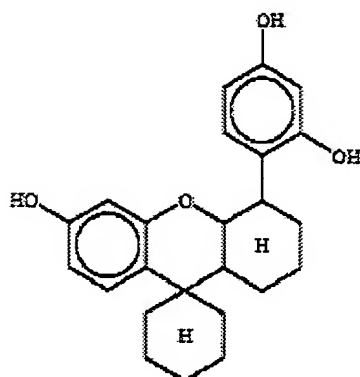
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(C2)



(C3)



(c4)

KAWATA ET AL discloses a positive photosensitive composition comprising an alkali-soluble resin, a quinonediazide ester and a polyphenol additive. Applicants are directed to column 7 and 8, compound (b-7) which meets the claimed compound of formula (I) lacking only a methyl or ethyl group in the two central aromatic groups. KAWATA ET AL teaches a hydrogen substituted in the two central aromatic groups. As for claimed ingredient (c) in the application, KAWATA ET AL discloses a phenol compound found in column 24, line 35 defined as (C-49) which would meet the elution properties recited if processed in that manner. Further compound (C-64) in column 36, line 45 - 60 also meets the claimed elution properties.

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MOMOTA ET AL teaches a photoresist composition comprising an alkali-soluble resin , a quinonediazide compound and a polyphenol additive. MOMOTA ET AL is cited to disclose that the use of alkyl groups or hydrogen groups in quinonediazide esters of polyphenol compounds is interchangeable and the skilled artisan would reasonably expect same or similar results, see the compounds of (I-1) and (I-3) found in columns 3/4, lines 60-68 and columns 5/6, lines 10-15, respectively. The compounds show a phenol compound to be esterified with quinonediazide to have hydrogens and methyl groups in the two central aromatic groups with relatively the same results with respect to resolution, sensitivity and film thickness loss, see Table 1 and 2, examples 5 and 7 in column 23, lines 1-68.

It would have been *prima facie* obvious to one of ordinary skill in the art of photoresist compositions to use an alkyl substituted polyphenol photosensitive compound disclosed in MOMOTA ET AL in the photoresist composition of KAWATA ET AL in place of the (B-7) as a photosensitive ingredient with the reasonable expectation of same or similar results as disclosed in KAWATA ET AL for excellent sensitivity, resolution and film thickness loss.

SATO et al discloses a positive photoresist composition comprising an alkali-soluble resin, a quinonediazide compound and a phenolic additive compound as seen in column 60, compound (C8). These additive compounds provide photoresist composition increased dissolution rates.

ANDO et al discloses a positive photosensitive composition comprising an alkali-soluble resin, a quinonediazide compound and a phenol additive, see column 7, line 39 -47 These compounds meets the claimed compound found in claim 12 for (c3). The phenol additive provides for improved excellent cross sectional profile.

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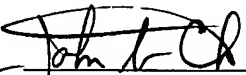
UETANI et al '657 discloses a positive photoresist composition comprising an alkali-soluble resin, a quinonediazide compound and a phenol compound additive, as seen in column 4, line 11-25. The additive phenolic compound provides for improved sensitivity, heat resistance and film thickness retention.

It would have been *prima facie* obvious to one of ordinary skill in the art of positive photoresist composition to use known phenolic additives as disclosed in SATO et al , ANDO et al and UETANI et al in place of the additive phenolic compounds in KAWATA et al and reasonably same or similar results in improved sensitivities, improved developing properties and excellent pattern profile formation.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (703) 308-2298. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

The fax phone number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.


John S. Chu
Primary Examiner, Group 1700

J.Chu
March 21, 2003